

REMARKS

Upon entry of this amendment, claims 1-19 are pending. Based upon the remarks below, the Examiner is respectfully requested to provide favorable consideration and allow the claims.

Claim Rejections- 35 USC § 103

Claims 1-4, 6, 10, 13 and 14 have been rejected under 35 USC § 103 as being unpatentable over Goto et al US Patent No. 6,013,332 (“the Goto et al patent”) in view of Kirkpatrick et al US Patent No. 7,410,890 (“the Kirkpatrick et al patent”). It is respectfully submitted than neither the Goto et al nor Kirkpatrick et al patent , either singly or in combination disclose or suggest the subject matter recited in the claims at issue. For example, claims 1 and 10 and the dependent claims thereupon recite the step of : “producing a volume of gas phase molecules of a boron hydride B_nH_m , where n and m are integers and $n > 10$ and $m \geq 0$ ”. In the case of the Goto et al patent , the disclosure is limited to decaborane, i.e., $B_{10}H_{14}$. In the case of decaborane $n = 10$. The claims at issue recite boron hydride molecules in which $n > 10$ which excludes decaborane. The Applicant respectfully disagrees with the assertion in paragraph 4 of the Detailed Action in regard to decaborane ($n = 10$) is in the claimed range of $n > 10$. The claimed range relates to chemical structures that have more than 10 Boron atoms. The Goto et al patent only addresses the decaborane structure, i.e. $n = 10$, and does not disclose or suggest chemical structures having more than 10 Boron atoms.

It is also respectfully submitted that the reliance on the Kirkpatrick et al patent is misplaced. In particular, paragraph 4 of the Detailed Action cites Col. 11, lines 48-64 as disclosing octadecaborane. Col. 11, lines 48-64 of the Kirkpatrick et al patent are set forth below for the convenience of the Examiner:

“FIG. 10 is a graph showing results of SIMS measurement of a series of boron infused films formed by a method in accordance with the invention. GCIB boron infusion (according to the invention) was performed using a mixture of 1% B_2H_6 in argon at five different gas-cluster acceleration potentials (2.5, 5, 10, 20, and 30 kV). All were accomplished without a pre-amorphization step. All were performed with 3×10^{14} gas clusters/cm.sup.2 infusion doses which resulted in corresponding boron atom doses shown on the face of the FIG. 10 graph. The boron 1×10^{18} at/cc concentration depths were approximately (75, 120, 180, 240, and 280

angstroms, respectively). The GCIB infusions performed using acceleration potentials (2.5, 5, 10, 20, and 30 kV) resulted in cluster energies for singly charged clusters of (2.5, 5, 10, 20, and 30 keV respectively) and higher energies for multiply charged clusters. A gas-cluster ion beam processing system similar to that shown in FIG. 2 was used to perform the GCIB infusion process.”

As should be clear, the above quoted passage discloses B₂H₆, which is diborane. The chemical formula for octadecaborane is B₁₈H₂₂. Although the cited reference points to: (1) energies of 2.5, 5, 10, 20, and 30 keV respectively ; (2) infusion doses of 3 x10¹⁴ gas clusters/cm². and (3) boron 1x 10¹⁸ at/cc concentration depths were approximately 75, 120, 180, 240, and 280 angstroms, respectively, nothing in the quoted paragraph or in the patent suggest Boron clusters of more than 10 Boron atoms, i.e. n > 10 or octadecaborane, n = 18, i.e., B₁₈H₂₂. Nowhere does the Kirkpatrick et al patent disclose or suggest octadecaborane or a chemical structure having more 10 Boron atoms. For all of the above reasons, the Examiner is respectfully requested to reconsider and withdraw this rejection.

Claims 5, 7-9, 15 and 17-19 have been rejected under 35 USC § 103 as being unpatentable over Goto et al patent in view of Gregg et al et al US Patent Application Publication No. 2005/0006799 (“the Gregg et al publication”). Claims 5, 7-9, 15 and 17-19 are dependent upon claims 1 and 10. The Goto et al patent is discussed above. The Gregg et al publication was cited for disclosing a vaporizer. The Gregg et al publication does not otherwise disclose a method for implanting ions as recited in the claims at issue. For these reasons and the above reasons, the Examiner is respectfully requested to reconsider and withdraw the rejection of these claims.

Claims 11 and 12 have been rejected under 35 USC § 103 (a) as being unpatentable over the Goto et al patent in view of Horsky et al US Patent Application Publication No. US 2004/0002202 A1¹ (“the Horsky et al publication”). Claims 11 and 12 are dependent upon claim 10. As such these claims recite, in combination, boron hydride ions in which B > 10. As discussed above, the Goto et al patent does not disclose or suggest such ions. The Horsky et al publication also does not disclose boron

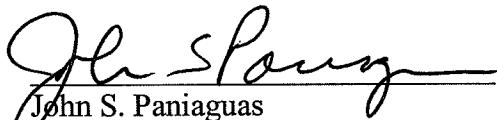
¹ The Publication No. US 2004/0002202 A1 as recited in Paragraph 11 of the Detailed Action is incorrect. The Applicant assumes that the correct publication no. is US 2004/0002202.

hydride ions in which $n > 10$. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 11 and 12.

Respectfully submitted,

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